REMARKS

Claims 1, 2, 4-10, and 12-15 are currently pending in this application. Claim 11 has been canceled herein without prejudice or disclaimer. Claim 15 is new. Support for new claim 15 can be found throughout the specification and Examples as originally filed. No new matter is added nor new issue raised.

Provisional Claim Objection

The Examiner has stated that should Claim 5 be found allowable, Claim 11 will be objected to under 37 C.F.R. 1.75 as a substantial duplicate of Claim 5.

Without conceding the validity of the provisional objection, and solely for the purposes of advancing prosecution, Applicants have canceled Claim 11 herein without prejudice or disclaimer.

Claim rejections under 35 USC § 103

Claims 1, 2, and 4-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 2003-201306 (using the translation of U.S Patent No. 7,317,056) to Yoshimura et al. in view of U.S. Patent Application Publication No. 2003/0153877 to Nawata et al., in further view of U.S. Patent No. 3,691,108 to Ichiki et al. (Office Action, page 3)

The rejection alleges that the claims are an obvious combination of the shell forming process of Yoshimura with the absorbent core of the Nawata water-absorbing resin and the anionic surfactant of Ichiki.

The rejection describes Yoshimura as teaching a method for forming core/shell particles comprising first forming a shell layer from a mixture of deionized water, acrylic acid, 2-hydroxyethylacrylate, and ammonium persulfate initiation and applying said shell layer to a core monomer mixture produced in the presence of the shell. The rejection states that Yoshimura is silent to the inclusion of a cross linking agent in the methacrylic (core) solution. The rejection

relies on the core materials of Nawata to provide core materials. The rejection further relies on Ichiki to provide surfactants of the instantly claimed formula.

Applicants respectfully disagree and traverse the rejection.

In the present invention, water-in-oil type reverse phase suspension polymerization is performed to form a resin particle.

In the first step, **an aqueous solution** (e), which contains (meth)acrylic acid; a crosslinking agent (c); and an anionic surfactant (d) are added in a **hydrophobic organic solvent** (a) which contains a nonionic surfactant (b) in order to form a core portion. In the hydrophobic organic solvent (a), the aqueous solution (e) is dispersed finely and polymerization is performed using (meth)acrylic acid and a crosslinking agent (c) thereof.

Then, polymerization is further performed by adding an **aqueous solution** (g), which contains a water-soluble vinyl polymer (f), in a suspension obtained in the first step to form a shell portion that covers the core portion.

Due to **the combination of the hydrophobic organic solvent and the two aqueous solutions,** suitable dispersion of aqueous solutions can be performed, and cured core portion and a shell portion can be formed.

The particle structure of the present invention can be envisioned as shown below.

Hydrophobic organic solvent

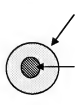
In the present invention, a core portion is formed using a cross-linking agent. Therefore ***the crosslink density of the core portion is larger than that of the shell portion***, and due to the structure, the excellent characteristics of the present invention can be obtained, wherein it is possible to repeatedly absorb a liquid as shown in Table 1 of the present specification. The excellent effects of the present invention are clearly seen by comparing Examples 1 to 7 with Comparative Examples 3 and 4 as described in present specification.

Looking specifically at **Comparative Example 4**, when ***the crosslink density of the core portion is smaller than that of the shell portion, the effects of the claimed invention cannot be obtained***. As shown in Table 1, the number average molecular weight of the shell portion of Comparative Example 4 is 20000. This shows that crosslink density of the shell portion is larger than that of the core portion. As described in the specification, repeated blood absorbency of Comparative Example 4 is very poor in the first test and the subsequent second test.

Regarding Yoshimura (JPA- 2004201306)

In Yoshimura, water-in-oil type reverse phase suspension polymerization **is not** performed. The particle structure of Yoshimura can be envisioned as shown below.

Aqueous medium



Copolymer of an unsaturated carboxylic acid and a **hydrophilic** monomer (→shell portion)

Copolymer of a radically polymerizable main monomer and a radically polymerizable functional monomer, **wherein almost all of the monomer is insoluble in water**) (→core portion)

As described in the Examples of Yoshimura (see, specifically, "Pressure-sensitive Adhesive Composition A1"), **an aqueous medium such as deionized water** is used as a medium to form an emulsion comprising polymer particles.

Furthermore, in Yoshimura, a core portion is formed mainly using **monomers which have low solubility in an aqueous solution**.

In order to form a core portion in a shell portion which has been formed in an aqueous medium and includes a copolymer of an unsaturated carboxylic acid and a hydrophilic monomer, a large amount of monomers such as butyl acrylate (22.5 parts by weight) and 2-ethylhexyl acrylate (63.5 parts by weight) **which are insoluble in water** must be used in the monomer mixture which forms a core. Although methacrylic acid, which is soluble in water, is also disclosed as a monomer to form a core, the amount thereof is very small (2.0 parts by

weight). Even if only methacrylic acid is used to form a core, methacrylic acid could not pass through the shell portion apart from the aqueous medium.

Furthermore, even if (meth)acrylic acid, or an aqueous solution, which contains (meth)acrylic acid, a crosslinking agent and an anionic surfactant, as disclosed in instant Claim 1 were added to an aqueous copolymer solution, wherein unsaturated carboxylic acid and a hydrophilic comonomer have been polymerized as in Yoshimura, **a core portion could not have be obtained**.

That is, since methacrylic acid is soluble in water, even if methacrylic acid or an aqueous solution, which contains (meth)acrylic acid, a crosslinking agent and an anionic surfactant as disclosed in the present invention was used to form a core in the method of Yoshimura, methacrylic acid could not pass through the shell portion of Yoshimura, but instead would form a cover (shell) portion on the surface of a core portion, formed from a copolymer of an unsaturated carboxylic acid and a hydrophilic monomer – i.e. the shell components of Yoshimura – as shown below.

Aqueous medium

Copolymer of an unsaturated carboxylic acid and a hydrophilic monomer - the shell components of Yoshimura

Aqueous solution (i), - the core portion in the present invention

Such a structure has a shell portion is formed from an aqueous solution, which contains (meth)acrylic acid, a crosslinking agent and an anionic surfactant, and a core portion is formed from a copolymer of an unsaturated carboxylic acid and a hydrophilic monomer. That is, such a structure has a shell portion having a higher crosslink density than the core portion. This is distinct and different from the present invention. In addition, such structure would be comparable to **Comparative Example 4** of the present specification. As discussed above, Comparative Example 4 shows that s***uch a structure cannot achieve suitable repeated blood absorbency***.

Yoshimura discloses **a synthetic resin emulsion** used for an easily water-swellable pressure-sensitive adhesive. Dried core-shell particles are not disclosed in Yoshimura as a product. As described below, the purpose of the invention of Yoshimura is that, when water is provided to a synthetic resin emulsion of Yoshimura, the synthetic resin emulsion can easily be swollen, can easily be separated from the adhered product with the aid of water, and can be dissolved or dispersed in water.

> The use of the synthetic resin emulsion can provide a pressure-sensitive adhesive which has excellent adhesive properties such as adhesive strength, cohesive force and tackiness and can be easily swollen with water without any treatment with an alkali. (column 2, lines 37 to 29 of Yoshimura)

Furthermore, although the core-shell structure is disclosed in Yoshimura, the core portion is formed so that a polymer having glass transition point of -20°C is formed from monomers as described below. Such a core having a low glass transition point is distinct and different from the core portion of the present invention which has been cured using a crosslinking agent.

> said core comprises a copolymer of a monomer mixture comprising a radically polymerizable main monomer and a radically polymerizable functional monomer, and said monomers constituting the monomer mixture are selected so that the glass transition point (Tg) of the copolymer produced by polymerization is -20° C. or below… (column 3, lines 6 to 12 of Yoshimura)

Yoshimura requires that the core-shell structure is easily swollen, but does not require increased crosslink density of the core portion. Based on the disclosure of Yoshimura, of one of ordinary skill in the art would have had no reason to increase crosslink density of a core portion in order to improve repeated blood absorbency.

With regard to Nawata, Nawata discloses a method for forming water absorbing resin particles. As shown in Comparative Example 1 of the present invention, a core portion which does not have a shell portion cannot achieve suitable repeated blood absorbency.

Regarding Ichiki, Ichiki discloses sodium sulfonate of a straight chain α-olefin but does not disclose a core-shell structure.

As described above, the method of the present invention provides a core-shell structure polymer particle, wherein crosslink density of the core portion is larger than that of the shell portion, the surfaces of the particle has considerable surface irregularities, and the particle has excellent repeated blood absorbency. The combination use of an anionic surfactant and a nonionic surfactant provides the unexpected result of the claimed invention.

Even if one of ordinary skill in the art were to combine the three cited reference, there would have been no reasonable expectation of success in obtaining the core-shell structure having surface irregularities of the present invention, wherein the core portion is provided using an aqueous solution (e) containing (meth)acrylic acid, a crosslinking agent (c) and an anionic surfactant (d).

Applicants respectfully assert that the combined teachings or suggestions of Yoshimura, Nawata, and Ichiki do not teach or suggest all of the features of Claim 1 as a whole, either alone or in any combination. Accordingly, Claim 1 is believed to be allowable. All rejected dependent claims depend on Claim 1. As such, those dependent claims are believed to be allowable because for, at least, the reasons mentioned above.

Accordingly, reconsideration and withdrawal of all rejections under 35 U.S.C. § 103 are respectfully requested.

CONCLUSION

In view of the amendments and remarks made herein, the application is believed to be in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are respectfully requested. Please charge any required fee or credit any overpayment to Deposit Account No. 04-1105, under Order no. 80364 (47762).

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Respectfully submitted,

Customer No. 21874

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